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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/541,765	04/03/2000	Mareike Klee	PHD 99.046	4722

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EXAMINER	
THOMAS, ERIC W	
ART UNIT	PAPER NUMBER
2831	

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/541,765	KLEE ET AL.	
	Examiner	Art Unit	
	Eric W. Thomas	2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/8/05 has been entered.

DETAILED ACTION

INTRODUCTION

The examiner acknowledges, as recommended in the MPEP, the applicant's submission of the amendment dated 1/25/05. At this point, claims 1, 9-12 have been amended. Thus claims 1, 3-12 are pending in the instant application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 & 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Abe et al. (US 5,760,432).

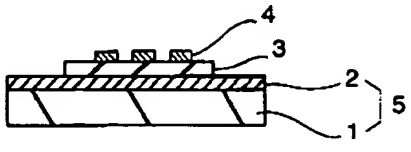


FIG. 1(B)

Abe et al. disclose in fig. 1b, a ceramic passive component that comprises a carrier substrate (1), at least one first electrode (2) formed of a metal material (example 1) and having a first surface disposed, directly on the substrate, at least one thin film dielectric (3) of a thickness in the range of about 0.25-0.75 μm (col 5 lines 60-67 and col 6 lines 1-3) having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (4) disposed on a second surface of the at least one dielectric opposing said first surface of the at least one dielectric (1); wherein the at least one dielectric comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r (inherent feature of the claimed material— $(Ba_{1-x}Ca_x)TiO_3$ wherein x = 1 – see col. 4 lines 50-60) and wherein the ferroelectric ceramic material with a voltage-dependent dielectric constant is a $(Ba_{1-x}Ca_x)TiO_3$ wherein x = 1.

Regarding claim 6, Abe et al. disclose the carrier substrate is an oxide ceramic (MgO).

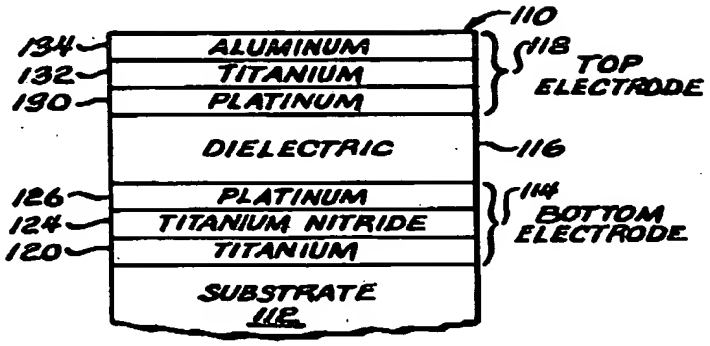
Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,005,102) in view of Ogi et al. (US 5,645,634).



Regarding claim 1, Larson discloses in fig. 2, a ceramic passive component which comprises a carrier substrate (112), at least one first electrode (114) formed of a metal material (Pt, TiN, Ti) and having a first surface disposed, directly on the substrate, at least one thin film dielectric (116) of a thickness 0.4 μm (col 4 lines 1-6) having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (118) disposed on a second surface of the at least one dielectric opposing said first surface of the at least one dielectric (116); wherein the at least one dielectric comprises a ferroelectric material.

Larson discloses the claimed invention except for the ferroelectric is a ceramic material having a voltage dependent relative dielectric constant ϵ_r selected from the group of materials (as listed in claim 1).

Ogi et al. teach the use of a ferroelectric material having a voltage dependent relative dielectric constant formed from a $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$. Ogi et al. teach that said ferroelectric material could be deposited at a thickness of 0.25 microns.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the capacitor of Larson using the dielectric ferroelectric of Ogi et al., since such a modification would provide the capacitor with a high quality dielectric material having a high dielectric constant.

Regarding claim 3, Larson discloses the at least one first electrode (114) comprises a first (120) and second (126) electrically conductive layer.

Regarding claim 4, Larson discloses the first electrically conducting layer of the first electrode is Ti.

Regarding claim 5, Larson discloses the second electrically conducting layer of the first electrode comprises a metal (Pt).

Regarding claim 6, Larson discloses the substrate is formed from a silicon material.

7. Claims 3-5, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,760,432) in view of Konushi et al. (US 6,104,597).

Regarding claim 3, Abe et al. disclose the claimed invention except for the at least one first electrode or the at least one second electrode comprises at least a first and second electrically conducting layer.

Konushi et al. teach in fig. 3 that it is known in the capacitor art to form a second electrode having a first electrically conducting layer (9) and a second electrically conducting layer (3).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the upper electrode of Abe et al. using the second electrode of Konushi et al., since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 4, Konushi et al. teach that the first electrically conducting layer of the at least one second comprises Cr (see col. 5 lines 50-55)

Regarding claim 5, Konushi et al. teach that the second electric conducting layer of the at least one second electrode comprises a metal material (see col. 5 lines 40-50).

Regarding claim 8, Abe et al. disclose the claimed invention except for a protective layer is laid over the entire component.

Konushi et al. teach the use of (fig. 9A) a protective layer (4) laid over the entire component.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the capacitor of Abe et al. by forming a protective layer over the entire component as taught by Konushi et al., since such a modification would protect the capacitive element from an external environment.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 5,760,432) in view of Klee et al. (US 6,125,027).

Abe et al. disclose the claimed invention except for the at least one dielectric layer multiple layers.

Klee et al. teach that it is common in the capacitor art to form a dielectric layer from multiple layers (see col. 3 lines 45-55).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the capacitor of Abe et al. by using multiple dielectric layers as taught by Klee et al., since such a modification would improve the electrical properties of the dielectric layer.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US 5,159,524) in view of Ogi et al. (US 5,645,634) and Buswell et al. (US 4,156,211).

Hasegawa et al. disclose in fig. 1, a ceramic passive component that comprises a carrier substrate (1), at least one first electrode (2) formed of a metal material (see fig. 1 cross-hatching) and having a first surface disposed, directly on the substrate, at least one non-limiting thin film dielectric (3) of a thickness having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (4) disposed on a second surface of the at least one dielectric opposing said first surface of the at least one dielectric.

Hasegawa et al. disclose the claimed invention except for the at least one dielectric is selected from the Markush group of claim 9, and does not disclose the thickness of the dielectric layer is the range of about 0.25-0.75 μm.

Ogi et al. teach the use of a thin film dielectric that comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r (inherent feature of the claimed material— $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$. and wherein the ferroelectric ceramic material with a voltage-dependent dielectric constant is a $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$; and Ogi et al. teach that the dielectric layer can be formed with a thickness of 0.25 μm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Hasegawa et al. using a known dielectric having a thickness of 0.25 μm as taught by Ogi et al, since such a modification would provide the capacitor with a thin dielectric layer (thereby reducing the size of the capacitor element) having high dielectric constant.

Hasegawa et al. disclose the claimed invention except for the capacitive component is mounted with other components on a voltage-controlled oscillator.

Buswell et al. teach that it is known mount capacitors with other components on a voltage-controlled oscillator (col. 2 lines 1-10).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount the capacitor of Hasegawa et al. on the voltage-controlled oscillator that comprises other components, since such a modification would provide an electrical system for the capacitor of Hasegawa et al. to operate in, and provide the system of Buswell et al. with a capacitor having large adjustable capacitance.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US 5,159,524) in view of Ogi et al. (US 5,645,634) and Teague et al. (US 4,468,644).

Hasegawa et al. disclose in fig. 1, a ceramic passive component that comprises a carrier substrate (1), at least one first electrode (2) formed of a metal material (see fig. 1 cross-hatching) and having a first surface disposed, directly on the substrate, at least one non-limiting thin film dielectric (3) of a thickness having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (4) disposed on a second surface of the at least one dielectric opposing said first surface of the at least one dielectric.

Hasegawa et al. disclose the claimed invention except for the at least one dielectric is selected from the Markush group of claim ~~9~~ 10, and does not disclose the thickness of the dielectric layer is the range of about 0.25-0.75 μm.

Ogi et al. teach the use of a thin film dielectric that comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r (inherent feature of the claimed material— $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$. and wherein the ferroelectric ceramic material with a voltage-dependent dielectric constant is a $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$; and Ogi et al. teach that the dielectric layer can be formed with a thickness of 0.25 μm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Hasegawa et al. using a known dielectric

having a thickness of 0.25 μm as taught by Ogi et al, since such a modification would provide the capacitor with a thin dielectric layer (thereby reducing the size of the capacitor element) having high dielectric constant.

Hasegawa et al. disclose the claimed invention except for the capacitive component is mounted with other components on a filter.

Teague et al. teach that it is known to mount a capacitor with other components on a filter (col. 3 lines 5-21).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount the capacitor of Hasegawa et al. on the filter that comprises other components, since such a modification would provide an electrical system for the capacitor of Hasegawa et al. to operate in, and provide the system of Teague et al. with a capacitor having large adjustable capacitance.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US 5,159,524) in view of Ogi et al. (US 5,645,634) and Gayle (US 5,801,601).

Hasegawa et al. disclose in fig. 1, a ceramic passive component that comprises a carrier substrate (1), at least one first electrode (2) formed of a metal material (see fig. 1 cross-hatching) and having a first surface disposed, directly on the substrate, at least one non-limiting thin film dielectric (3) of a thickness having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (4) disposed on a second

surface of the at least one dielectric opposing said first surface of the at least one dielectric.

Hasegawa et al. disclose the claimed invention except for the at least one dielectric is selected from the Markush group of claim ~~9~~ 11, and does not disclose the thickness of the dielectric layer is the range of about 0.25-0.75 μm.

Ogi et al. teach the use of a thin film dielectric that comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r (inherent feature of the claimed material— $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$. and wherein the ferroelectric ceramic material with a voltage-dependent dielectric constant is a $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$; and Ogi et al. teach that the dielectric layer can be formed with a thickness of 0.25 μm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Hasegawa et al. using a known dielectric having a thickness of 0.25 μm as taught by Ogi et al, since such a modification would provide the capacitor with a thin dielectric layer (thereby reducing the size of the capacitor element) having high dielectric constant.

Hasegawa et al. disclose the claimed invention except for the capacitive component is mounted with other components on a delay line.

Gayle teaches that it is known mount capacitors with other components on a delay line (col. 3 lines 5-21).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount the capacitor of Hasegawa et al. on the delay line that

comprises other components, since such a modification would provide an electrical system for the capacitor of Hasegawa et al. to operate in, and provide the system of Gayle with a capacitor having large adjustable capacitance.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (US 5,159,524) in view of Ogi et al. (US 5,645,634) and Jantunen et al. (US 5,923,233).

Hasegawa et al. disclose in fig. 1, a ceramic passive component that comprises a carrier substrate (1), at least one first electrode (2) formed of a metal material (see fig. 1 cross-hatching) and having a first surface disposed, directly on the substrate, at least one non-limiting thin film dielectric (3) of a thickness having a first surface disposed on a second surface of the at least one first electrode opposing said first surface of the at least one first electrode and at least one second electrode (4) disposed on a second surface of the at least one dielectric opposing said first surface of the at least one dielectric.

Hasegawa et al. disclose the claimed invention except for the at least one dielectric is selected from the Markush group of claim ~~9~~ 12, and does not disclose the thickness of the dielectric layer is the range of about 0.25-0.75 μm. ET 6/19/05

Ogi et al. teach the use of a thin film dielectric that comprises a ferroelectric ceramic material with a voltage-dependent relative dielectric constant ϵ_r (inherent feature of the claimed material— $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$. and wherein the ferroelectric ceramic material with a voltage-dependent dielectric

constant is a $Ba_{1-x}Sr_xTiO_3$ wherein $1 > x > 0.76$ and $0.10 > x > 0$; and Ogi et al. teach that the dielectric layer can be formed with a thickness of 0.25 μm.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor of Hasegawa et al. using a known dielectric having a thickness of 0.25 μm as taught by Ogi et al, since such a modification would provide the capacitor with a thin dielectric layer (thereby reducing the size of the capacitor element) having high dielectric constant.

Hasegawa et al. disclose the claimed invention except for the capacitive component is mounted with other components on a component with a tunable capacitance.

Jantunen et al. teach that it is known to mount a capacitor with other components on a component with a tunable capacitance. (col. 3 lines 5-21).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to mount the capacitor of Hasegawa et al. on the component with a tunable capacitance that comprises other components, since such a modification would provide an electrical system for the capacitor of Hasegawa et al. to operate in, and provide the system of Jantunen et al. and provide the system with a capacitor having large adjustable capacitance.

Response to Arguments

13. Applicant's arguments with respect to claims 1, 3-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W. Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on Monday - Friday 5:30 AM - 2:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ewt

6/19/05

ERIC W. THOMAS
PRIMARY EXAMINER